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FM 4-75

WAR DEPARTMENT

COAST ARTILLERY
FIELD MANUAL



SEACOAST ARTILLERY
SERVICE OF THE PIECE
6-INCH GUN ON BARBETTE CARRIAGE

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COAST ARTILLERY FIELD MANUAL

SEACOAST ARTILLERY

SERVICE OF THE PIECE

6-INCH GUN ON BARBETTE CARRIAGE

CHANGES }

No. 1 }

WAR DEPARTMENT,
WASHINGTON, March 1, 1943.

FM 4-75, April 10, 1940, is changed as follows:

SECTION VI½ (ADDED)

DESTRUCTION OF MATÉRIEL

■ 41. GENERAL PRINCIPLES.—*a.* Tactical situations may arise when, due to limitations of time or transportation, it will become impossible to evacuate all equipment. In such situations it is imperative that all matériel which cannot be evacuated be destroyed to prevent—

- (1) Its capture intact by the enemy.
- (2) Its use by the enemy, if captured, against our own or allied troops.

b. The working principles to be followed are:

(1) Methods for the destruction of matériel subject to capture or abandonment in the combat zone must be adequate, uniform, and easily followed in the field.

(2) Destruction must be as complete as the available time, equipment, and personnel will permit. If thorough destruction of all parts cannot be completed, the most important features of the matériel should be destroyed and parts essential to the operation or use of the matériel, and which cannot be easily duplicated, ruined, or removed. *The same essential parts must be destroyed on all like units to prevent the enemy's constructing one complete unit from several damaged ones by cannibalization.*

(3) The destruction of matériel, subject to capture or abandonment in the combat zone, *will be undertaken only upon orders of the harbor defense or higher commander.*

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E.O. 11652, Sec. 3(E) and 5(D) or (E)

OSD letter, May 3, 1972

By MBS NARS, Date 4/22/76

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c. To accomplish adequate and uniform destruction of matériel, it is essential that—

(1) All echelons prepare plans for the destruction of matériel in the event of imminent capture. Such plans must be flexible enough to make allowance for variations in available time, equipment, and personnel.

(2) All echelons be trained to effect the desired destruction of matériel issued to them. *Training will not involve the actual destruction of matériel.*

d. Certain of the methods outlined require special tools and materials, such as TNT and incendiary grenades, which normally may not be items of issue. The issue of such special tools and material, the vehicles for which issued, and the conditions under which destruction will be effected *are command decisions in each case*, according to the tactical situation.

■ 42. PRIORITY OF DESTRUCTION.—*a.* Matériel should be destroyed in the following sequence:

- (1) Tube, breech, and recoil mechanism.
- (2) Carriage.
- (3) Power equipment.
- (4) Sights and observing equipment.
- (5) Plotting room equipment.
- (6) Ammunition.

(7) Fire control and observation stations and ammunition magazines.

b. In the event of imminent capture, everything that could be of possible use to the enemy should be destroyed. If however, evacuation is probable, all sights, optical instruments, and other valuable small items should be evacuated.

■ 43. TUBE.—*a.* The selection of a method of demolition will depend on the tactical situation and the materials available, but regardless of the method selected, all tubes must be rendered useless. The four methods for the destruction of the tube are presented in order of their effectiveness.

b. Demolition by unfuzed HE shell and either M9A1, AT grenade or M6, AT rocket.

(1) Remove the recoil cylinder plug. It is not necessary to wait for the recoil fluid to drain completely before firing the piece as in (4) below.

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(2) Lay an armed (safety pin removed) M9A1 AT grenade, HE, or M6, AT rocket in the tube about 6 inches in front of the projectile (in (3) below) with the ogive nose end toward the shell. The grenade or rocket must be centered in the tube, using either a wooden adapter or a wad of waste.

(3) Place an unfuzed, boosterized HE shell in the gun and close the breech. An unfuzed 6-inch shell, Mk II or Mk IIA1 should be used.

(4) Fire the gun electrically if possible, if not, use a lanyard at least 100 feet long. The person firing the piece should be under cover in rear of the piece and about 20° off the line of fire.

(5) When using this method, the danger zone is about 500 yards in radius.

c. Demolition with unfuzed HE shell and TNT.

(1) Remove the recoil cylinder plug.

(2) Ram an unfuzed HE shell into the forcing cone. Insert thirty to fifty $\frac{1}{2}$ -pound TNT blocks into the chamber behind the shell. Close the breechblock and detonate the TNT charge. The fuse to the TNT may be routed through the primer hole in the spindle.

(3) A sufficient length of safety fuse should be used to permit personnel to reach cover, or detonate the TNT electrically from cover. The danger space is about 500 yards.

(4) See FM 5-25 for instructions on the wiring and firing of TNT.

d. *Demolition by TNT blocks.*—(1) Remove the recoil cylinder plug.

(2) Insert eight to ten $\frac{1}{2}$ -pound TNT blocks in the tube and thirty to fifty $\frac{1}{2}$ -pound blocks in the chamber. Close the breechblock and plug the muzzle tightly for about 18 inches with dirt. Detonate the TNT charges simultaneously.

(3) The firer should be under cover. The danger space is about 500 yards.

(4) For instructions on the wiring and firing of TNT see FM 5-25.

e. *Demolition by incendiary grenades.*—If evacuation is imminent and it is desired to accomplish demolition without tell-tale explosions, this method should be used.

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(1) Place six to eight unfuzed M14 incendiary grenades in the chamber. They should be placed on their sides and stacked one on top of another. Close the breech. Equip another incendiary grenade with a 15-second Bickford fuze, ignite it, and throw it in the muzzle. Elevate the cannon quickly to its maximum elevation.

■ 44. BREECH.—Any of the above methods for destroying the tube should also destroy the breech; but if the method selected does not, a heavy sledge may be used to render the breech useless.

■ 45. RECOIL MECHANISM.—*a.* If the methods of paragraph 43*b*, *c*, or *d* are used for destroying the tube, the recoil mechanism will be effectively destroyed by draining the oil prior to firing.

■ 46. CARRIAGE.—The barbette carriage should be adequately destroyed if the recoil cylinders are completely drained when using the methods in paragraph 43*b*, *c*, or *d*.

■ 47. POWER EQUIPMENT.—All auxiliary power equipment should be rendered useless. Electric motors and generators can most effectively and easily be put out of operation by injuring the field or armature windings. If time is available, the motor shell may be broken with a sledge and the coils ruined with a crowbar. If time is short, a small arms bullet fired into each coil will effectively destroy it. A .45 or .30 caliber bullet may easily be directed into the coils through the air vents in either end bell, but care should be taken to see that nobody is in the path of ricochet. Switch panels, sockets, plugs, and fuse or circuit breaker panels should be smashed with a sledge or ax.

■ 48. SIGHTS AND OBSERVING INSTRUMENTS.—These should be evacuated if possible. If they cannot be evacuated, they should be thoroughly smashed.

■ 49. PLOTTING ROOM EQUIPMENT.—All boards and instruments should be smashed and burned if possible. Data transmitters and all communication equipment should be smashed.

■ 50. AMMUNITION.—*a. Projectiles.*—Separate loading projectiles should be stacked horizontally with ogive ends pointing the

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same direction. Remove the fuze from the center shell in the top row of each pile. Pack a detonating cap, with fuse, next to the booster in each such center shell and detonate. The danger zone is at least 200 yards. Shells standing on their bases cannot be satisfactorily destroyed by sympathetic detonation.

b. Powder.—Separate loading propelling charges can best be destroyed by burning. This is most effectively accomplished when they are out of their containers or the containers are split.

■ 51. FIRE CONTROL AND OBSERVATION STATIONS AND AMMUNITION MAGAZINES.—*a.* These installations can best be destroyed by demolition with TNT.

b. See FM 5-25 for details of demolition planning and execution.

[A. G. 062.11 (2-1-43).] (C 1, Mar. 1, 1943.)

BY ORDER OF THE SECRETARY OF WAR:

G. O. MARSHALL,
Chief of Staff.

OFFICIAL:

J. A. ULIO,
Major General,
The Adjutant General.

FM 4-75

**COAST ARTILLERY
FIELD MANUAL**



**SEACOAST ARTILLERY
SERVICE OF THE PIECE
6-INCH GUN ON BARBETTE CARRIAGE**

**Prepared under direction of the
Chief of Coast Artillery**



**UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON: 1940**

For sale by the Superintendent of Documents, Washington, D. C. - Price 10 cents

WAR DEPARTMENT,
WASHINGTON, April 10, 1940.

FM 4-75, Coast Artillery Field Manual, Seacoast Artillery, Service of the Piece, 6-inch Gun on Barbette Carriage, is published for the information and guidance of all concerned.

[A. G. 062.11 (3-8-40).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

E. S. ADAMS,
Major General,
The Adjutant General.

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SEACOAST ARTILLERY

SERVICE OF THE PIECE

6-INCH GUN ON BARBETTE CARRIAGE

(The matter contained herein supersedes TR 435-267, June 10, 1925.)

SECTION I

GENERAL

■ 1. **SCOPE.**—*a.* Guns, carriages, and batteries differ in type, arrangement, and design, and for this reason the service of the piece as prescribed herein is intended only as a guide for the battery commander in the assignment of individuals and duties. Changes in the details of the service of the piece to meet local conditions may be made.

b. The duties of the members of the gun section in the service of the piece which are not covered in the body of this manual are shown in the drill table in section VII.

■ 2. **REFERENCES.**—See appendix.

SECTION II

ORGANIZATION OF THE GUN SECTION

■ 3. **COMPOSITION.**—*a.* Each emplacement of one gun is manned by a gun section consisting of a chief of section, a gun squad, and an ammunition squad.

b. Under war strength organization, the gun section consists of 27 enlisted men. Under peace strength organization, it consists of 23 enlisted men.

■ 4. **GUN SQUAD.**—The gun squad under both peace and war strength organization (16 enlisted men) consists of the gun commander (chief of section), the gun pointer, the range setter, two display board operators, two recorders, and nine cannoneers, numbered from 1 to 9, inclusive.

■ 5. AMMUNITION SQUAD.—*a.* Under war strength organization, the ammunition squad (11 enlisted men) consists of the chief of ammunition and 10 cannoneers, numbered from 10 to 19, inclusive.

b. Under peace strength organization, the squad (7 enlisted men) consists of a chief of ammunition and 6 cannoneers, numbered from 10 to 15, inclusive.

c. The squad is divided by the chief of ammunition into details for the service of powder and projectiles.

■ 6. FORMATION.—Each section assembles in two ranks with 4 inches between files and 40 inches between ranks. The post of the chief of section (gun commander) is in the front rank, 1 pace to the right of his section. The artillery mechanics who are members of the maintenance section normally form with the firing section, and take post in the front rank on the left of the first and last gun sections. (See fig. 1.)

SECTION III

DUTIES OF PERSONNEL

■ 7. BATTERY EXECUTIVE.—*a.* The battery executive commands the firing section of the battery and is in charge of the gun emplacements and accessories.

b. He is responsible to the battery commander for the training and efficiency of the personnel of the firing section, for the condition of the matériel and ammunition under his charge, for the observance of all safety precautions pertaining to the service of the piece, and for the police of the emplacements.

c. He inspects the matériel and ammunition under his charge, and personally verifies the adjustment of all pointing devices as frequently as necessary to insure accuracy. He tests all circuits and firing devices before each drill or firing, paying special attention to the safety features.

d. He receives the reports of the assistant battery executive or chiefs of sections and reports to the battery commander, "Sir, firing section in order," or reports defects which he is unable to remedy without delay.

e. When firing on time interval signal, he is responsible that the guns are fired immediately upon receipt of the proper firing signal, safety precautions permitting. If it becomes necessary to suspend fire for a time interval, he commands: RE-LAY, and reports his action to the battery commander.

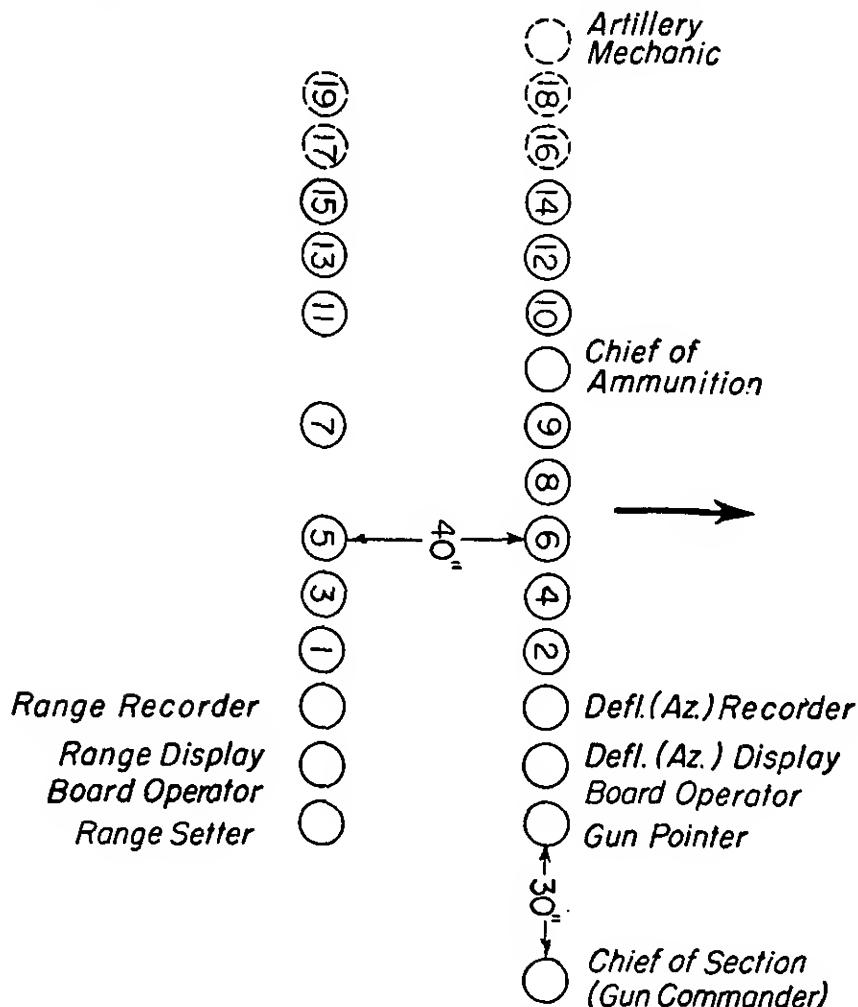


FIGURE 1.—Formation of the gun section.

NOTE.—Cannoneers Nos. 16 to 19, inclusive, are included in the war strength organization only.

f. At the conclusion of drill or firing, the battery executive commands: REPLACE EQUIPMENT, inspects the emplacements, and reports to the battery commander.

■ 8. ASSISTANT BATTERY EXECUTIVE.—The assistant battery executive performs the duties of the battery executive insofar

as they pertain to the emplacement or emplacements to which he is assigned.

■ 9. CHIEF OF SECTION.—*a.* The chief of section (gun commander), a noncommissioned officer, is in command of the gun section and gun squad. He supervises the service of the piece and the service of ammunition, and personally directs the work of care and preservation at the emplacement to which his section is assigned. He is responsible to the officer in charge of the emplacement for the training and efficiency of the personnel of his section, for the condition of the matériel and ammunition under his charge, for the observance of all safety precautions at the emplacement, and for the police of the emplacement.

b. He commands: 1. DETAILS, 2. POSTS, when the section arrives in rear of the emplacement, and supervises the procuring of equipment. After all details have reached their posts (fig. 2), he commands: EXAMINE GUN. He then makes an inspection of the gun, carriage, and other matériel, paying special attention to the recoil cylinder, firing mechanism, safety devices, and the oiling of the various bearings. He receives the reports of the chief of ammunition and of the various details of the gun squad, and reports to the officer in charge of the emplacement, "Sir, No. _____ in order," or reports defects which he is unable to remedy without delay.

c. When necessary to verify the section he commands: CALL OFF. The cannoneers in each squad call off their titles or numbers, beginning with the unnumbered members of the section, followed by the numbered members in order.

d. At the command TARGET, he repeats the command and target designation. As soon as the gun pointer is on the target, the chief of section reports or signals to the officer in charge of the emplacement, "Sir, No. _____ on target." He indicates to the chief of ammunition the projectile, fuze, and powder to be served.

e. At the command LOAD, the chief of section repeats the command and supervises the loading. However, under no circumstances will he permit his gun to be fired prior to the receipt of the command COMMENCE FIRING from the battery commander.

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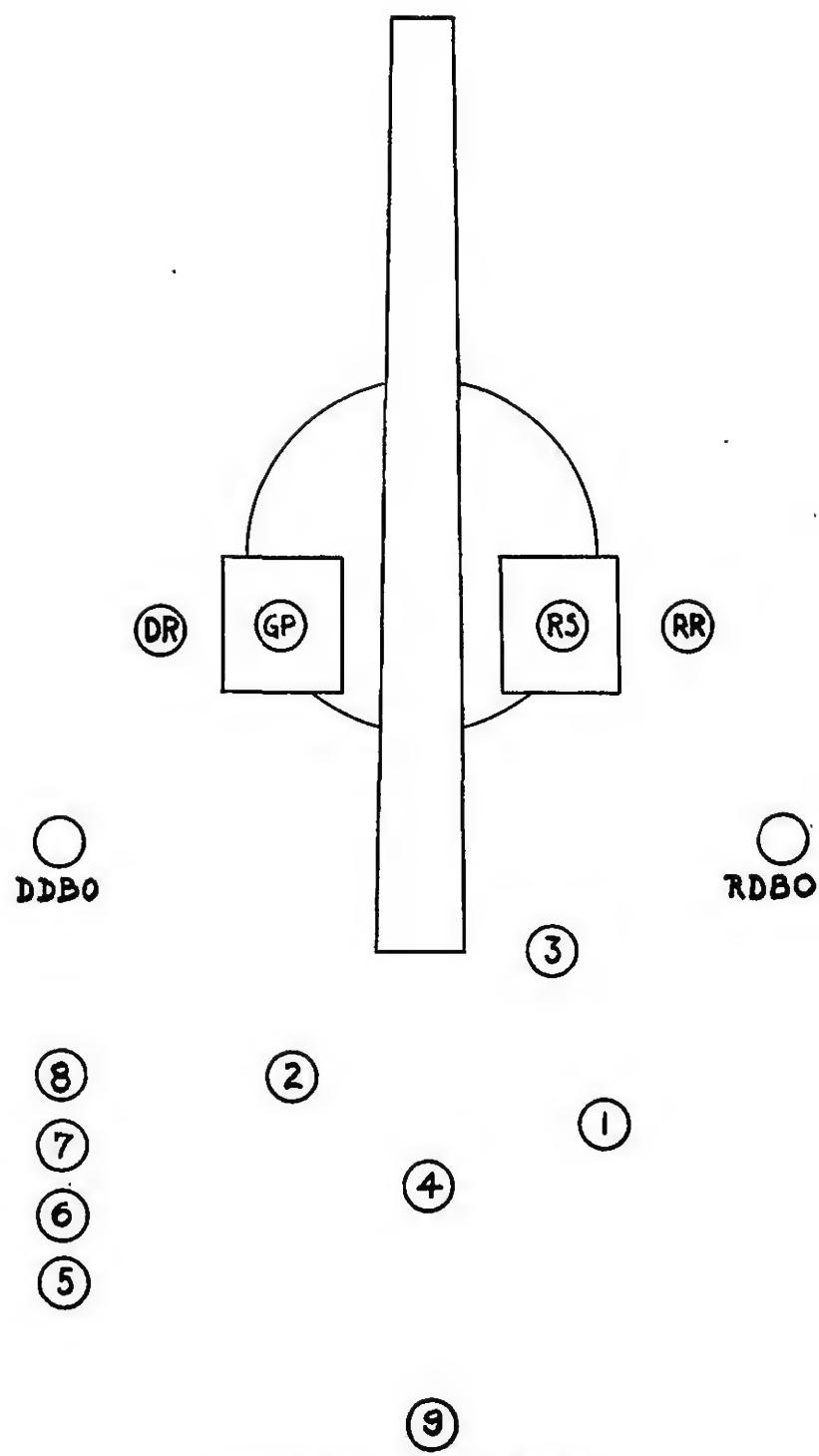


FIGURE 2.—Details, posts.

f. At the command COMMENCE FIRING, if the piece is unloaded, the chief of section commands: LOAD. He also commands: LOAD before each shot of a series.

g. In case II firing, after receiving the report "Range set" from the range setter, the gun commander calls and signals, "Ready," indicating to the gun pointer that the piece is ready to fire.

h. In case III firing, after receiving the reports, "Range set" and "Azimuth set" from the range setter and gun pointer respectively, he calls and signals, "Ready," indicating that the gun is ready to fire. At the sounding of the proper time interval signal, he commands: 1. NO. -----, 2. FIRE.

i. When firing on time interval signal, he is responsible to the officer in charge of the emplacement that the piece is fired immediately upon the proper signal, safety precautions permitting. He commands: RE-LAY, in case the time interval signal fails to sound at the gun, or in case his gun is not ready to fire when the time interval signal sounds. He repeats the command RE-LAY when it is given by the officer in charge of the emplacement.

j. In case of a misfire, he calls, "No. ----- misfire." He sees that the requirements of paragraph 33 are observed.

k. The chief of section commands: CEASE FIRING when the number of shots specified has been fired. When the number of shots has not been specified, he repeats the command CEASE FIRING when it is given by the battery commander and reports to the officer in charge of the emplacement, "Sir, No. ----- (so many) rounds fired." When dummy ammunition is used he commands: UNLOAD, and sees that the piece is unloaded.

l. He keeps a record of the number of rounds fired by his gun, showing the date and approximate time, in order that the emplacement book may be kept posted accurately and up to date.

m. At the command REPLACE EQUIPMENT, the chief of section supervises the replacing of equipment, sees that all matériel is properly secured, and the emplacement policed, and then, unless otherwise directed, forms his section.

■ **10. GUN POINTER.**—The gun pointer is charged with the duty of pointing the piece in direction. He is responsible

to the gun commander for the proper operation, care, and adjustment of the sight, the traversing mechanism, and the electric firing mechanism and circuit (if used). For detailed duties, see drill table, section VII.

■ 11. RANGE SETTER.—The range setter is charged with the duty of laying the piece in range. He is responsible to the gun commander for the proper operation, care, and adjustment of the elevating mechanism. For detailed duties, see drill table, section VII.

■ 12. CHIEF OF BREECH.—The chief of breech (No. 3) is responsible to the gun commander for the efficiency of the personnel of the breech detail. He is specially charged with the observance of safety precautions insofar as they pertain to his detail. He listens for the explosion of the primer which may be audible if the powder charge fails to explode. For detailed duties, see drill table, section VII.

■ 13. DISPLAY BOARD OPERATORS.—*a.* The deflection (azimuth) and range display board operators are responsible to the gun commander for the proper operation of the display boards and recording of all data received from the plotting room.

b. At the command DETAILS, POSTS, they procure chalk, blackboard erasers, forms for recording data, and telephones and take post at the display boards.

c. At the command EXAMINE GUN, they clean the display boards if necessary, put on the telephone headsets, and test the telephones to the plotting room and report to the gun commander, "Deflection (azimuth) display board and range display board in order," or report any defects they are unable to remedy without delay.

d. At the command TARGET, they receive deflections (azimuths) and ranges from the plotting room, post them on the display boards and record them on the data forms.

e. At the command CEASE FIRING, they continue posting and recording data received from the plotting room.

■ 14. RECORDERS.—*a.* The deflection (azimuth) recorder and the range recorder are responsible for the checking and

recording of all deflections (azimuths) and ranges, respectively, set on the gun.

b. At the command DETAILS, POSTS, they procure pencils and forms for recording data. The deflection (azimuth) recorder takes post convenient to the gun pointer, and the range recorder takes post convenient to the range setter.

c. At the command TARGET, they keep a continuous record of the data at which the gun is set, being especially careful to record, check, and identify the data at which the gun is actually fired.

d. At the command CEASE FIRING, they continue to record data as long as data are being set on the gun.

■ 15. CHIEF OF AMMUNITION.—a. The chief of ammunition (noncommissioned officer) is responsible to the chief of section for the efficiency of the personnel of his squad, for the care of the ammunition and ammunition-handling apparatus, for the uninterrupted service of ammunition, for the observance of all safety precautions in the care and service of ammunition, and for the police of the magazines and galleries under his charge.

b. He keeps a record of all ammunition received into or delivered from the magazines and galleries under his charge, exercising particular care that the projectiles, fuzes, and powder charges are listed under proper name and type. He keeps the chief of section informed regarding the ammunition on hand and reports any defects found.

c. At the command DETAILS, POSTS, the chief of ammunition opens the galleries (and magazines, if necessary) and posts the members of his squad.

d. At the command EXAMINE GUN, he inspects the matériel under his charge, gives the necessary instructions for preparing ammunition and equipment for drill or firing, and reports to the chief of section, "Ammunition service in order," or reports defects that he is unable to remedy without delay.

e. At the command LOAD, he directs and supervises the service of ammunition.

f. At the command CEASE FIRING, when dummy ammunition is used, he causes the dummy projectiles and dummy powder charges to be put in their proper places in the gallery.

g. At the command **REPLACE EQUIPMENT**, he supervises the replacing of equipment, sees that all ammunition and matériel is properly secured, forms his squad, and reports to the chief of section.

■ **16. AMMUNITION SQUAD.**—The chief of ammunition divides the six cannoneers of the ammunition squad into two details, the projectile detail and the powder detail. The size of each detail depends on local conditions and is determined by the battery commander.

a. *Projectile detail.*—The chief of ammunition designates one of the cannoneers as chief of detail who supervises the work of the detail. Previous to and during firing, the detail moves projectiles from the magazine to the serving table, carrying the projectiles by hand if the battery is not equipped with hoists. In addition, the detail maintains the ammunition and ammunition-handling apparatus, and polices the magazines and corridors.

b. *Powder detail.*—The chief of ammunition designates one of the cannoneers as chief of detail who supervises the work of the detail. The detail keeps a record of all pertinent data including weights of charges, lot number of powder, and temperature of magazines. In the service of powder, the detail removes from the container the powder charge which is to be served to the gun for the next round, places it with igniter end to the rear on a powder tray, removes the powder tag and sees that the powder bag is not defective. The detail carries the loaded tray to the emplacement and turns it over to the powder-serving detail of the gun squad, and receives an empty tray to be brought back to the magazine for re-loading. In addition, the detail maintains the powder-handling devices and assists the projectile detail.

■ **17. ARTILLERY MECHANICS.**—The artillery mechanics assisted by members of the gun sections make such minor repairs and adjustments as can be made with the means available. The chief artillery mechanic is the custodian of the supplies pertaining to the gun emplacements to which his battery is assigned. He is responsible for the condition of the store-rooms pertaining to the gun emplacements and the supplies contained therein. The chief mechanic or his assistant issues

such equipment, tools, oils, paints, and cleaning materials to the members of the gun sections as are necessary for the service and care of the guns and accessories.

SECTION IV

NOTES ON SERVICE OF THE PIECE

- 18. GENERAL INSTRUCTIONS.—Service of the piece should be conducted with dispatch and precision, and with as few orders as possible. Loading with dummy ammunition and pointing the piece as for firing is the normal practice at drill. Cannoneers change positions at a run. Except for the necessary orders, reports, and instructions, no talking will be permitted. Commands will be given in the prescribed forms. Signals may be substituted for commands whenever desirable. (See FM 4-5 and FM 4-20.)
- 19. THE COMMAND STAND FAST.—If it is desired to halt all movements of matériel and personnel, the officer in charge of the emplacement or the chief of section (gun commander) commands: STAND FAST.
- 20. THE COMMAND RE-LAY.—At the command RE-LAY, the display board operators post the new data on the display boards, the gun pointer and range setter continue to point the gun in direction and elevation according to the new data, and No. 3 slacks the lanyard (if used).
- 21. FIRING MECHANISM.—
 - a. Before firing, No. 3 assembles the firing mechanism to the gun and sees that the vent is clear and that the primer seat is clean and unpitted. He sees that the firing leaf cannot be drawn back until the slide has been lowered and the breechblock closed and locked.
 - b. In firing, No. 3 hooks the lanyard (if used) and inserts a primer after the breechblock is closed and locked. He lowers the slide of the firing mechanism completely down before attempting to fire the gun, otherwise the primer may be blown to the rear, endangering the gun squad. After the gun has been fired he unhooks the lanyard, and as soon as the breech is open he removes the fired primer.

c. It is of great importance that No. 3 clean the primer seat and vent after each shot. When a primer sticks it is usually due to powder residue having collected between the primer and the primer seat or vent, or the primer seat having become pitted. A fired primer that has become stuck may be removed by using a drift through the vent, at the same time raising the firing mechanism slide.

■ 22. LOADING.—When the command COMMENCE FIRING is given, the chief of section commands: LOAD. No. 1 opens the breech. No. 2 inserts the loading tray in the breech recess, being careful not to bur or damage the threads in the breech. No. 5 or 6 inserts a projectile in the breech. No. 4 places the head of the rammer against the base of the projectile and rams it firmly into its seat. No. 2 withdraws the loading tray. No. 7 or 8 places the powder tray with powder charge in the breech recess and No. 2 pushes the powder into the chamber by hand to such distance that the breech in closing will give the charge a final push into the chamber.

SECTION V

SAFETY PRECAUTIONS

■ 23. GENERAL.—*a.* The following safety precautions are prescribed for peacetime conditions. They indicate as well the principles to be followed in war service conditions, but should be interpreted by the personnel concerned according to the circumstances existing at the time of any particular emergency.

b. Further instructions concerning safety precautions to be followed will be found in AR 750-10 and FM 4-20.

■ 24. THE COMMAND CEASE FIRING.—Any individual in the military service will command or signal CEASE FIRING if he observes any conditions which make it unsafe to fire. At the command CEASE FIRING, lanyards will be detached if firing by lanyard, or the gun pointers will take their hands off the firing magnetos if firing electrically.

■ 25. FIRING MECHANISM.—The firing mechanism will be inspected and tested frequently to insure proper operation and

functioning of the safety features. Just before firing, the mechanism will be tested with a friction primer which will be inserted before the breechblock is rotated. A strong pull will be exerted on the lanyard while the block is rotated to ascertain if it is possible to fire the primer before the breech is closed and locked.

■ 26. LANYARD.—The lanyard will be pulled with a quick, strong pull (not a jerk) from a position as near the rear of the piece as is convenient, and sufficiently to the right of the line of recoil to insure safety.

■ 27. PRIMERS.—Precautions in the care and handling of primers will be observed as follows:

a. Prior to firing, the primer pouch will be examined to make certain that it contains live primers only.

b. Care will be taken not to drop primers.

c. Except when testing safety devices, primers will not be inserted until after the breechblock has been closed and locked.

d. Primers will never be inserted or removed by means of the button or wire.

e. The greatest care will be exercised in lowering the leaf of the firing mechanism.

f. Fired primers will be discarded as soon as they are removed from the firing mechanism.

g. Precautions will be taken to prevent any attempt to use primers that have failed. They will be handled with great care due to the possibility of a primer hangfire. These primers will be turned in to the ordnance officer for inspection.

■ 28. FUZES.—a. Projectiles equipped with base detonating fuzes will normally be received properly fuzed for firing.

b. Projectiles equipped with point detonating fuzes will normally be received unfuzed and will be fuzed as required in the following manner:

(1) Unscrew the plug from the fuze socket.

(2) Insert the fuze, being careful to see that it is fitted with its felt or rubber washer, and screw it home by hand.

(3) Screw up the fuze with the fuze wrench but without using any great force.

(4) If there is any difficulty in screwing the fuze home, it should be removed and another inserted. If the same

trouble is experienced with the second fuze, the shell should be rejected.

c. For further instructions on the care and handling of fuzes, see FM 4-20 and appropriate Technical Manuals.

■ 29. POWDER CHARGES.—In the magazines, all powder charges will be kept in their containers except the charge which is to be served to the piece for the next succeeding round. The powder charge for any given round will not be brought near the breech until the preceding round has been fired, the powder chamber sponged, and the face of the mushroom head wiped.

■ 30. SPONGING POWDER CHAMBER.—After each shot the powder chamber will be sponged and the face of the mushroom head wiped with the liquid provided for this purpose.

■ 31. COVER FOR GUN SECTION.—When firing high-explosive shell and cover is prescribed, each member of the gun section will be required to take adequate shelter each time the piece is fired. (See AR 750-10.)

■ 32. POOR VISIBILITY.—Firing will be stopped at once if visibility becomes so poor as to endanger the tug or shipping in the field of fire.

■ 33. MISFIRES.—*a. In case the discharge of the primer is heard but the powder charge has failed to ignite*, at least 10 minutes must elapse after the firing of the primer before the old primer is removed or the breechlock is opened. During this period all persons remain clear of the path of recoil and the piece is kept pointed at the target or at a safe place in the field of fire.

b. In case the discharge of the primer is not heard, if a special device is available which permits removal of the primer by a person entirely clear of the path of recoil, the primer may be removed after 2 minutes have elapsed since the last attempt to fire. If, after removal, it is found that the primer actually failed to fire, no further wait is necessary before inserting a new primer or opening the breech. If, on the other hand, examination shows that the primer has fired, the precautions prescribed in *a* above will be

observed. If no special device can be employed for the removal of the primer the same precautions will be observed.

SECTION VI

CARE AND ADJUSTMENT OF MATÉRIEL

■ 34. GENERAL.—*a.* Officers will be held strictly responsible for the proper care and preservation of all artillery matériel in their charge.

b. The methods prescribed for the operation, care, and preservation of matériel are those described herein and in other publications issued by the War Department, a thorough understanding of which is required of all officers and others having charge of matériel.

c. Major repairs will be made by the services concerned. Adjustments and minor repairs will be made by battery personnel.

d. Cleaning and preserving materials will be used strictly according to *TM 9-850.

■ 35. FIRING MECHANISM.—*a.* (1) While this mechanism forms part of a heavy gun, the parts are very closely adjusted and the clearances very small. The greatest care must be exercised therefore in keeping the mechanism well oiled and free from rust and dirt. It will be removed from the gun when not in use, kept in a small box provided for it, and stored in the armament chest.

(2) Distortion of the firing leaf or battering of the safety bar seat in the side of the firing leaf may be caused by the application of force under the firing leaf to raise it. The application of force in this manner is prohibited.

b. Inspection and tests.—(1) From time to time and before firing the firing mechanism will be carefully inspected to insure that all parts are in good condition. Any firing leaf that is damaged to the extent that firing the gun is possible before the breechblock is closed and locked, or any spring found too weak to keep the firing leaf pressed against the slide will be replaced.

(2) Previous to firing each of the primers to be used in target practice will be inserted in the obturator spindle in

*See Appendix.

order to test the proper fit of each primer. The firing leaf and slide will be lowered to the firing position in order to demonstrate that these parts will function properly with each primer.

(3) A firing mechanism which has been tried and is known to function satisfactorily in a particular gun will be stamped with the serial number of that gun, and will be used with that gun in order to insure proper functioning.

■ 36. CARE OF CARRIAGE.—*a.* Carriages will be traversed and guns elevated and depressed at least twice a month throughout their entire allowed movement. From time to time the azimuth at which they stand should be changed to prevent uneven settling of the platform.

b. All parts of carriages must be kept free from rust at all times. If rust is found it should be removed immediately. Its removal from all bearing parts, especially piston rods, requires particular attention in order that clearances will not be unduly increased. The use of sandpaper or emery cloth for this purpose by battery personnel is forbidden, and nothing more abrasive than crocus cloth may be used.

c. If any leakage occurs from the hydraulic recoil system it should be remedied immediately, calling upon the ordnance officer if necessary for the services of trained ordnance personnel.

d. The repacking of stuffing boxes may be done when necessary by trained enlisted men under the supervision of an officer, but will be done preferably by trained ordnance personnel.

e. The copper gaskets between cylinders and their heads should be in good condition, and should be replaced whenever necessary in order to prevent leakage.

f. Oil holes must be cleaned out frequently to keep them free from sand and grit, and will be kept closed by the screw plugs or screws provided except in the act of oiling. Before oiling at any oil hole, carefully wipe off any dirt or grit near the opening that might be carried down into the bearing by the oil.

g. All parts should be lubricated at frequent intervals whether the carriage is maneuvered or not. When carriages

are in use for daily drills, a thorough lubrication twice each week should be sufficient for all but the most severely used parts.

■ 37. REFILLING RECOIL CYLINDER.—The recoil cylinder should be emptied and refilled at least every 3 months. "Recoil oil, light" is prescribed. No. 5 removes the filling plug, fills the cylinder, allows any air that may be present in the cylinder to escape, refills, and notifies the gun commander that the cylinder is ready for inspection. After the inspection, No. 5 screws the filling plug well home, and replaces his implements.

■ 38. OBTURATOR.—*a.* With the breechblock in the loading (open) position, the spindle, with split rings, gas check pad, and filling-in disk upon it, will be inserted into the block. Special care must be taken that the front and rear split rings are not interchanged. The obturator spindle washers or spring will be put in place upon the rear end of the spindle projecting through the block, and the spindle will be secured by screwing up the spindle nut or housing by hand. The breechblock will then be translated and rotated halfway into the firing position. The spindle nut or housing will then be screwed up with the wrenches provided for that purpose and locked in place. The spindle will be properly adjusted if, while it has no play longitudinally, it can be turned around freely by taking hold of the mushroom head with both hands.

b. If, after firing a few rounds, the spindle is found to have longitudinal play, the adjusting operation described above will be repeated.

c. The proper adjustment of the obturator is of great importance. It will not be made with the breechblock open as this will cause injury to the gas check pad.

d. Under no circumstances will the obturator spindle nut or housing be removed from the end of the spindle when the breechblock is locked, otherwise an attempt to open the mechanism will jam the gas check pad and injure the split rings.

e. Mushroom heads, spindles and split rings require continual care to prevent rusting and pitting. When gas check

pads are removed from guns, they should be enclosed in suitable containers which will preserve them from deformation or contact with moisture.

■ 39. SPONGING SOLUTION.—*a.* The sponging solution is a solution of water and castile soap. Its purpose is to provide a sponging liquid which will extinguish burning residue in the chamber of the gun and also serve to lubricate the breech recess. If the soap solution is not available, plain water may be used.

b. The preparation of the solution consists of dissolving 1 pound of castile soap in 4 gallons of water. Yellow soaps should not be used as they are liable to leave a gummy deposit in the breech recess. The soap should be shaved from the bar to facilitate dissolving. It is then added to the water and the water heated until the soap is dissolved. The water should be stirred with as little agitation as possible to prevent foaming.

c. To avoid the necessity of handling large receptacles, as much soap as will be required may be dissolved in one bucket of water. This concentrated soap solution can then be added to water in other receptacles in the prescribed proportions.

■ 40. CARE OF THE BORE.—*a.* As soon as possible after any period of firing and every day thereafter until all "sweating" has stopped, the bore of the gun will be cleaned, dried, and oiled. The cleaning solution is made by dissolving $\frac{1}{2}$ pound of soda ash in each gallon of boiling water. Wash the bore with this solution using a bore sponge around which burlap has been wrapped. Then wipe the bore thoroughly dry with new burlap. Finally, coat the bore with rust-preventive compound grade A (heavy) or grade B (medium) depending on local conditions.

b. Care must be exercised to prevent staves of the sponges, slush, and cleaning brushes from rubbing against the lower portion of the bore as excessive wear of the lands will result from such practice.

SECTION VII

DRILL TABLE

Service of the piece, 6-inch gun (on barbette carriage)

Details	DETAILS, POSITS	(a) EXAMINE GUN (b) REPORT	TARGET	LOAD	CEASE FIRING
Gun pointer.....	Procures the sight, places it in its seat, and takes post on the gun pointer's platform.	(a) Examines sight and verifies adjustment of the azimuth index; examines traversing mechanism and circuit (if used). (b) Reports to the gun commander, "Sight, traversing mechanism, and electric firing mechanism (if used in order," or defects he is unable to remedy.	See note 1.....	Keeps the piece pointed in direction. In case II, fires, repeats to the deflection recorder the data he sets on the sight; fires the piece or gives the command FIRE as soon after the gun commander has called or signaled "Ready," as the piece is pointed. When so directed, he endeavors to locate the position of the splash of the shot, and corrects his deflection if necessary. In case III, firing, he sets the azimuth index to the azimuth posted on the display board and calls, "Azimuth set."	Keeps the piece pointed in direction until the command CEASE TRACING is given.
Rangefinder.....	Ranges post, facing the range setter.....	(a) Examines traversing mechanism; cleans and oils the gears if necessary. (b) Reports to the gun commander, "Elevation in order," or defects he is unable to remedy.	See note 2.....	Lays the piece in range; calls, "Range set."	Keeps the piece laid in range until the command CEASE TRACING is given.
No. 1 (breach detail).....	Procures cotton waste, a can containing lubricating oil, and a sponge, places them in a convenient place and takes post 1 yard to the rear and right of the breech, facing it.	(a) Removes the breech cover and places it at the designated place; examines, cleans and oils the breechblock and breech mechanism. (b) No duties.	No duties.....	Opens the breech, cleans and oils the block if necessary, and as soon as the powder charge has been inserted, closes the breech. Seizes the lever handle as soon as the gun is fired and opens the breech for the next round.	Opens the breech when so directed.
No. 2 (lanyard detail).....	Procures the loading tray and cotton waste. He places the tray convenient to the breech and takes post 2 feet to the rear and left of the breech, facing it.	(a) Examines, cleans and oils the breech recess and gas check seat. (b) No duties.	No duties.....	After the breech is opened, he wipes off the mushroom head and gas check seat and puts the loading tray in place. Withdraws the loading tray after the projectile has been rammed into the breech; permits the insertion of the powder tray, and pushes the powder into the chamber by hand. Unhooks the lanyard (if one is used) after the piece is fired.	When dummy ammunition is used, he withdraws the powder charge and inserts the loading tray.
No. 3 (chisel of breech).....	Procures the lanyard (if one is used), primers, pouch, punch, drill, reamer and firing mechanism, and takes post 2 feet to the right of the breech on line with its face, facing it.	(a) Examines the vent and firing mechanism, cleans the vent and primer seat, examines the breech mechanism, breechblock, breech recess, chamber and bore, and gives the necessary orders for putting them in condition for firing; places the firing mechanism in position. (b) Reports to the gun commander, "Breech in order," or defects he is unable to remedy.	No duties.....	Inserts the primer after the breechblock is closed and locked and lowers the leaf of the firing device completely down; hooks the lanyard (if one is used) before the primer is inserted; pulls the lanyard at the command FIRE. As soon as the breech is open after firing, he removes the old primer, clears the vent, and cleans the primer seat.	Removes the primer when so directed. Supervises the unloading when dummy ammunition is used.
No. 4 (rammer detail).....	Procures the extractor and rammer, places the extractor in a convenient position, and takes post about 4 feet in rear of the breech, facing it. Holds the rammer vertical with his right hand, his head on the platform by his right foot.	(a) Assists the breech detail in cleaning. (b) No duties.	No duties.....	As soon as a projectile is placed on the loading tray, he runs it firmly into its seat.	When dummy ammunition is used, he brings up the extractor and withdraws the dummy projectile to where it can be removed by No. 5 or 6.
Nos. 5 and 6 (projectile detail).....	No. 5 procure the wrench for filling plugs, a funnel, and a measure containing recoil oil. Takes post with No. 6 near a shot truck, facing the gun.	(a) No. 5 uncovers the filling plugs and fills the recoil cylinder. The gun commander inspects the cylinder, after which No. 5 screws the filling plugs well home, and replaces his implements. No. 6 removes the muzzle cover and places it at the designated place; assists the range setter in cleaning and oiling the elevating mechanism. (b) No duties.	No duties.....	Nos. 5 and 6 alternately pick up projectiles from the shot truck and place them on the loading tray. The number not loading a projectile arranges the remaining projectiles on the shot trucks and keeps the truck convenient to the breech.	When dummy ammunition is used, Nos. 5 and 6 alternately remove the dummy projectiles from the breech recess and place them on the shot truck.
Nos. 7 and 8 (powder-preserving detail).....	Take post at that part of the loading platform most convenient to the source of powder supply.	No duties.....	No duties.....	Nos. 7 and 8 alternate in bringing up powder charges. The end of the powder tray is placed in the breech recess after the loading tray has been removed. No. 2 pushes the powder into the chamber by hand.	When dummy ammunition is used, Nos. 7 and 8 alternately bring up the empty powder trays to receive the dummy powder charges.
No. 9 (sponge detail).....	Procures the chamber sponge and a vessel containing liquid for sponging, places them in a convenient position, and takes post near the chamber sponge, facing the gun.	(a) Brings up the chamber sponge when called for (b) No duties.	No duties.....	Dips the chamber sponge in the liquid for sponging and allows the excess liquid to run off. As soon as the breechblock is opened after each shot, he sponges the chamber as quickly as practicable.	No duties.

NOTES

- At the command TARGET, the gun pointer in case II firing sets on the sight the deflection record on the display board, traverses the piece so that the line of sight is on the target; calls "On target;" continues to set data recorded on the display board and follows the target. In case III firing, he traverses the gun so that the azimuth index is set to the azimuth posted on the display board; calls "Azimuth set;" continues to traverse the gun to data recorded on the display board.
- At the command TARGET, the range setter lays the piece in range continuously according to data recorded on the display board.

APPENDIX

LIST OF REFERENCES

Ammunition, general ----- TM 9-905 (now published as TR 1370-A).

Cleaning and preserving materials ----- TM 9-850 (now published as TR 1395-A).

Coast artillery ammunition----- TM 4-205.

Coast artillery weapons and matériel ----- TM 4-210.

Drill ammunition ----- TM 9-905 (now published as TR 1370-D).

Examination for gunners ----- FM 4-150.

Fire control and position finding_ FM 4-15.

Formations, inspections, service and care of matériel----- FM 4-20.

Gunnery ----- FM 4-10.

Organization and tactics----- FM 4-5.

Preservation and care of matériel_ TM 4-245 (now published as TR 1160-20).

Safety precautions----- AR 750-10; FM 4-20.

